



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/557,822	11/23/2005	Pekka Vallittu	TUR-173	6060
32954	7590	06/12/2007	EXAMINER	
JAMES C. LYDON			MAI, HAO D	
100 DAINGERFIELD ROAD				
SUITE 100				
ALEXANDRIA, VA 22314				
			ART UNIT	PAPER NUMBER
			3709	
			MAIL DATE	DELIVERY MODE
			06/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/557,822

Applicant(s)

VALLITTU ET AL.

Examiner

Hao D. Mai

Art Unit

3709

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/23/05 and 1/27/06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, the transitional phrase “consisting essentially of” excludes any element not specified in the claim, i.e. limiting the scope of the claim to the specified materials only. Claim 6 however claims additional material (particulate filler), thus rendering the claim indefinite. See MPEP 2111.03.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-7, and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Karmaker et al. (U.S. Patent No. 6,186,790 B1)**

In Reference to Claim 1:

A matrix band, consisting essentially of fibers and a matrix, at least a portion of said matrix being at least partially uncured (*column 1 lines 55-67*). *Note that Karmaker et al.'s preshaped component can take the shape of a band as a dental appliance.*

Art Unit: 3709

In Reference to Claim 2:

Matrix band according to claim 1, wherein a portion of said matrix is in a cured form (*column 1 lines 61-67*).

In Reference to Claim 3:

Matrix band according to claim 1, wherein said matrix is selected from the group consisting of methyl methacrylate, hydroxyethyl methacrylate, urethan dimethacrylate, **triethylene glycol dimethacrylate**, 2,2-bis(4-(2-hydroxy-3-methacryloxy)phenyl)propane, polymethyl methacrylate, starburst methacrylated polyesters, hyperbranched methacrylated polyesters and mixtures thereof (*column 3 lines 34-62*).

Note that Karmaker et al. disclose a polymeric matrix of triethylene glycol dimethacrylate column 3, lines 55-56). Also see MPEP 2173.05(h) concerning Markush Groups.

In Reference to Claim 4:

Matrix band according to claim 1, wherein said fibers are selected from the group consisting of inert glass fibers, bioactive glass fibers, silica fibers, quartz fibers, ceramic fibers, carbon/graphite fibers, aramid fibers, ceramic fibers, poly(p-phenylene-2,6-benzobisoxazole) fibers, poly(2,6-diimidazo(4,5-b₄'5'-e)pyridinylene-1,4(2,5-dihydro)phenylene fibers, polyolefin fibers, fibers prepared from copolymers of olefins, polyester fibers, **polyamide fibers**, polyacrylic fibers, sol-gel processed silica fibers, collagen fibers, cellulose fibers, modified cellulose fibers and mixtures thereof (*Karmaker et al.: column 4 lines 39-47*).

Note that the fibers being polyamide fibers are disclosed by Goldberg et al. (column 12 lines 56-59) in U.S. Patent No. 4,894,012 which is incorporated therein the disclosure of Karmaker et al.

In Reference to Claim 5:

Matrix band according to claim 1, wherein said fibers are in the form of continuous fibers, chopped fibers, mat, sheet or mixtures thereof, and in that they are oriented in one, two, three or four directions, randomly or mixtures thereof (*column 4 lines 50-67*).

Art Unit: 3709

In Reference to Claim 6:

Matrix band according to claim 1, wherein it further comprises particulate filler material (*column 4 lines 14-16*).

In Reference to Claim 7:

Matrix band according to claim 6, wherein said particulate filler material is selected from the group consisting of inert glass, bioactive glass, **metal oxides**, ceramics, polymers and mixtures thereof (*column 4 lines 14-28*).

Note that tin oxide (column 4 line 28) is a metal oxide and is one of the suitable filler materials listed. Also see MPEP 2173.05(h) concerning Markush Groups.

In Reference to Claim 12:

Use of a matrix band (prefabricated component) according to the claim 1 for the manufacturing of a dental restoration, a dental bridge or a dental crown (*column 1 line 55 – column 2 line 2*).

In Reference to Claim 13:

Use according to claim 12, wherein said matrix band forms an integral part of the finished dental restoration, dental bridge or dental crown (*column 1 line 61 – column 2 line 2*).

In Reference to Claim 14:

Use of a matrix band according to claim 1 in dental applications (*column 1 lines 55-58*).

In Reference to Claim 15:

Use according to claim 14, wherein said application is selected from dental restoration, dental bridge, dental crown and endodontic treatment (*column 1 line 61 – column 2 line 2*).

Art Unit: 3709

5. Claims 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Vallittu et al. (U.S. Patent No. 6,197,410 B1).

In Reference to Claim 11:

A prepreg comprising fibers and a matrix, at least a portion of said matrix being at least partially uncured, for use as a dental matrix band (*Abstract; column 10 line 64-column 11 line 3*).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karmaker et al. (U.S. Patent No. 6,186,790 B1) in view of Garito et al. (U.S. Patent No. 4,433,960).

Karmaker et al. teach of a matrix band (preshaped and prefabricated component) consisting of fibers and a matrix according to claim 1 (see rejection of claim 1 above). Karmaker et al. however are silent to a dental restoration kit according to claims 8-10.

Regarding claim 8, Garito et al. disclose a dental kit comprising dental strips, restorative dental composite, and adhesives (column 5 lines 23-28). It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the strips with Karmaker et al.'s matrix band to take advantages of the superior properties of the matrix band, maximizing the quality of a dental restoration.

Art Unit: 3709

Regarding claim 9, Garito et al.'s kit also comprises of a hand-riveting tool as an applicator device (column 5 lines 32-33).

Regarding claim 10, Garito et al.'s dental strips are preshaped in a form of a dental restoration (e.g. splint, strip, or mesh for wrapping around a tooth or woven among the teeth as reinforcements). The strips can also act as dental bridges.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Xu et al. (U.S. Patent No. 5,861,445) has been included because a reinforcement of dental and other composite materials were disclosed. Freilich et al. (U.S. Patent No. 6,599,125 B1) has been included because a prefabricated components for dental appliances was disclosed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hao D. Mai whose telephone number is (571) 270-3002. The examiner can normally be reached on Mon-Thur 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Bomberge can be reached at (571) 272-4922. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HDM 06/08/2007


KENNETH BOMBERG
SUPERVISORY PATENT EXAMINER